

[0063] What is claimed as new and desired to be protected by Letters Patent of the United States is:

1. An optical assembly, comprising:  
a substrate including an upper surface and a cut-out portion;  
an optical array mounted on said upper surface; and  
an imaging assembly positioned at least partially within said cut-out portion,  
said imaging assembly including at least one imaging device mounted on a first chip;  
wherein said optical array is optically coupled to said imaging assembly.
2. The optical assembly of claim 1, wherein said optical array is affixed to said imaging assembly and said imaging assembly is affixed to said substrate.
3. The optical assembly of claim 2, further comprising a waveguide mounted on said substrate, said waveguide being optically coupled with said imaging assembly and including at least one waveguide core encased within a cladding.
4. The optical assembly of claim 3, further including an integrated optic chip mounted on said substrate.
5. The optical assembly of claim 4, wherein said integrated optic chip is mounted on said waveguide.

6. The optical assembly of claim 2, wherein said optical array comprises an optical bench.
7. The optical assembly of claim 2, wherein said optical array comprises an optical fiber array including a second chip and at least one optical fiber mounted to said second chip.
8. The optical assembly of claim 7, wherein a portion of said optical fiber extends over said cut-out portion.
9. The optical assembly of claim 7, wherein said second chip includes at least one V-groove, said optical fiber being mounted in said V-groove of said second chip.
10. The optical assembly of claim 9, wherein said second chip further includes a notch transverse to said V-groove.
11. The optical assembly of claim 7, wherein said optical fiber array comprises a lid chip.
12. The optical assembly of claim 1, wherein said first chip includes at least one V-groove, said imaging device being mounted in said V-groove of said first chip.

13. The optical assembly of claim 1, wherein said imaging device comprises a lens.
14. The optical assembly of claim 13, wherein said lens comprises a GRIN lens.
15. The optical assembly of claim 1, wherein said imaging device comprises a graded index fiber.
16. The optical assembly of claim 1, wherein said imaging device comprises a step-index fiber.
17. The optical assembly of claim 1, wherein said imaging device comprises a ball lens.
18. The optical assembly of claim 1, wherein said cut-out portion is a valley.
19. The optical assembly of claim 1, wherein said cut-out portion includes a recessed area between at least one pair of ledges.
20. The optical assembly of claim 19, wherein said substrate further includes at least one notch on a side of said ledges, said notch serving as a wick stop.
21. An optical assembly, comprising:  
a substrate including an upper surface, a cut-out portion and a side surface;

an optical array mounted on said upper surface;

an imaging assembly positioned at least partially within said cut-out portion,  
said imaging assembly including at least one imaging device mounted on a first chip,  
wherein said optical array is optically coupled to said imaging assembly; and

an integrated optic chip affixed to said side surface of said substrate.

22. The optical assembly of claim 21, further comprising a waveguide mounted  
on said integrated optic chip, said waveguide being optically coupled with said  
imaging assembly and including at least one waveguide core encased within a  
cladding.

23. The optical assembly of claim 21, wherein said substrate further comprises at  
least one notch serving as a wick stop.

24. An optical assembly, comprising:

a notch which serves as a wick stop;

a substrate including an upper surface;

an optical array mounted on said upper surface;

adhesive positioned on said upper surface so as to affix said optical array to  
said upper surface without said adhesive entering said notch;

an integrated optic chip mounted on said upper surface; and

a waveguide mounted on said integrated optic chip, said waveguide including

at least one waveguide core encased within a cladding, wherein said optical array is optically coupled to said integrated optic chip through said waveguide.

25. The optical assembly of claim 24, wherein said notch is within said substrate.

26. The optical assembly of claim 25, wherein said optical array is mounted on said upper surface such that it at least partially covers said notch.

27. The optical assembly of claim 26, wherein said optical array completely covers said notch.

28. The optical assembly of claim 24, wherein said optical array comprises an optical fiber array which includes at least one optical fiber mounted on a fiber chip.

29. The optical assembly of claim 24, wherein said optical array comprises an optical bench.

30. An optical assembly, comprising:

- a substrate including an upper surface;
- an optical array mounted on said upper surface, said optical array including a notch which serves as a wick stop;
- an integrated optic chip mounted on said upper surface; and
- a waveguide mounted on said integrated optic chip, said waveguide including

at least one waveguide core encased within a cladding, wherein said optical array is optically coupled to said integrated optic chip through said waveguide.

31. The optical assembly of claim 30, wherein said optical array comprises an optical fiber array which includes at least one optical fiber mounted on a fiber chip, said notch being within said fiber chip.

32. The optical assembly of claim 30, wherein said integrated optic chip and said optical array are optically coupled at an interface which is vertically above said notch.

33. An optical assembly, comprising:

a substrate including an upper surface;

an optical array mounted on said upper surface;

an integrated optic chip mounted on said upper surface, said integrated optic chip including a notch which serves as a wick stop; and

a waveguide mounted on said integrated optic chip, said waveguide including at least one waveguide core encased within a cladding, wherein said optical array is optically coupled to said integrated optic chip through said waveguide.

34. The optical assembly of claim 33, wherein said integrated optic chip and said optical array are optically coupled at an interface which is vertically above said notch.

35. A method for assembling an optical assembly which includes a substrate having an upper surface and a cut-out portion, an optical array, and an imaging assembly, said method comprising:

positioning said optical array on said substrate upper surface;  
lowering said imaging assembly at least partially within said cut-out portion;  
optically coupling said optical array with said imaging assembly; and  
affixing said imaging assembly to said substrate and said optical array to said imaging assembly.

36. The method of claim 35, wherein said optical array comprises an optical fiber array with a plurality of optical fibers and wherein said upper surface includes a plurality of V-grooves, said positioning step comprising positioning each said optical fiber within one of said V-grooves.

37. The method of claim 35, wherein said imaging assembly comprises a plurality of lenses within a chip, said optically coupling step comprising moving said optical fibers such that an end of each said fiber comes into contact with an end of a respective said lens.

38. The method of claim 35, wherein said affixing step comprises adhering said imaging assembly to said substrate and adhering said optical array to said imaging assembly.



39. The method of claim 35, wherein said cut-out portion includes a recessed area between a pair of ledges, further comprising the step of creating a notch on at least one side of said ledges.